

Winter 2015-2016 in Review

With March 1 comes the end of meteorological winter, a period defined as covering the months of December through February. The winter of 2015-16 was the warmest winter for many since 2011-12, and the third warmest winter on record at Indianapolis since 2000. Central Indiana experienced one of the warmest Decembers on record with many locations 10 to 13 degrees above normal for the month. Besides being a warm month with several locations reaching 70 degrees on at least one day, it was a very wet month as well, highlighted by several inches of rain falling in the few days immediately after Christmas as a stalled out front sat across the Ohio Valley.

More typical winter weather developed during January and February, but colder airmasses had difficulty remaining across the Ohio Valley for any extended period of time. As a result, snowfall amounts were below normal throughout the 3-month period. The largest daily snowfall received at Indianapolis was only a little bit over 2 inches, and the total snow for the December-February time period was only about 50% of normal.

The following is a review of weather conditions experienced in central Indiana during the winter season of 2015-2016.

Temperatures

DECEMBER

December started out on a seasonable note with high temperatures generally in the 30s through the first five days of the month. Temperatures rose after that as an upper level ridge brought unseasonably warm weather through about the middle of the month. Highs were consistently in the 50s or warmer, peaking from the 11th through the 14th as most all of central Indiana climbed into the 60s. Indianapolis shattered a record high on the 12th when the temperature made it to 70 degrees, 7 degrees warmer than the previous record set in 1877 and 1927. It was also the latest 70 degree reading in Indianapolis in recorded history. Most of central Indiana made it into the lower 70s on the 12th, an amazing 30 degrees above normal. Overnight lows in the middle and in some areas, upper 50s, made it feel more like spring.

Temperatures dropped beginning on the 15th in the wake of a cold frontal passage, returning primarily into the 40s during the day which remained above average. The coldest overnight temperatures of the month came for most locations on the 19th as lows fell into the teens and lower 20s. Highs during this time period were only in the lower and middle 30s. This was only a temporary reprieve from the warmer temperatures, as milder air quickly returned to the Ohio Valley beginning on the 20th and

continuing through Christmas. Highs rose into the 60s once again on the 23rd as southerly winds brought warm moist air into the region ahead of a strong cold front. Indianapolis tied a record high of 64 on the 23rd, matching the old daily record from 1933.

Highs remained in the 50s and lower 60s through the 27th as the weather stayed active. Indianapolis enjoyed the warmest Christmas Eve since 1982 and the warmest Christmas Day since 1987 with highs in the 50s. An unusual setup occurred along a slowly southward moving front on the early morning of the 27th as warmer air to the south of the boundary drew much warmer air into the southern half of Indiana. Many areas south of Interstate 70 rose into the 60s during the overnight hours with Bloomington making it to 70 degrees around 5 am. Temperatures fell quickly for the remainder of the day, with progressively cooler air settling in for the last few days of the year. Ironically, the coldest day of the month for most of central Indiana was the last day of 2015 with a chilly, gray day as temperatures only rose into the 30 to 35 degree range.

In Indianapolis, 17 days during the month experienced highs at or above 50 degrees. Only December 1877 and 1889 experienced more 50+ degree days with 18 and 22 respectively. The temperature made it to 65 or warmer on 3 days during the month, the most since December 2001. The 70 degree high on December 12 was the first 70 degree day since December 5, 2001.

JANUARY

Generally mild conditions started off the first third of January, but colder air would move into the area for the middle of the month. Warm air returned to end the month, with the warmest readings of the month seen during the last couple of days. The end result was a January that was just a little above average.

Temperatures warmed to near 50 degrees by January 8th, but by around the 10th readings had dropped to around 0 degrees. Low temperatures during the 10th to the 13th were in the single digits above, and in some areas, below zero.

A brief warmup occurred around the 15th, but then another surge of cold air moved in. Some locations did not even reach as warm as 10 degrees on the 18th. Warmer air returned to close out the month, with near record highs occurring on the 30th and 31st. The warmest temperatures of the month occurred during this period, with locations across the southern half of central Indiana seeing back-to-back highs in the 60s.

FEBRUARY

February began very mild with high temperatures rising into the lower 60s in many locations on the 2nd and 3rd. Indianapolis established a new record high for the 2nd with a high of 61, breaking a 105 year-old record of 59 set in 1911. Cooler weather returned for the next several days but in general, temperatures remained near to above normal. Highs peaked in the 50s on the 7th before much colder air returned to central Indiana for

the next seven to ten days. With an arctic airmass across much of the Ohio Valley, highs from the 10th through the 14th were well below normal, running from the mid-teens into the 20s. Several locations experienced their coldest morning of the month during this time period as lows fell into the single digits.

Strong southwest flow brought much milder air into the region beginning on the 18th and 19th, culminating in the warmest day of the month on the 20th as temperatures warmed into the upper 60s and lower 70s under sunny skies. Indianapolis set another record high on the 20th with 72 degrees, besting the 67 recorded on the date in 1983. For many locations, the first 70 degree day came almost a month earlier than in 2015, and closer to 6 to 8 weeks earlier than 2013 and 2014 when 70 degree weather didn't make an appearance until early to mid-April.

Temperatures once again fell back to below normal levels for the 24th through 26th with the passage of strong low pressure producing heavy snow over northwest parts of central Indiana and a cold rain elsewhere. Once again though, windy southerly flow developing ahead of a cold front enabled temperatures to surge into the 50s and 60s for the last three days of the month, highlighted by mid and upper 60s on the 28th.

Temperature Data for Sites in Central Indiana

Site	Winter 2015-16 Temperature	Normal Temperature	Diff. From Normal
Indianapolis Int'l Airport	35.4	30.5	+4.9
Lafayette	33.3	29.1	+4.2
Muncie	35.8	28.9	+6.9
Terre Haute	35.8	30.7	+5.1
Bloomington (*)	36.7	31.5	+5.2
Shelbyville (**)	36.5	30.7	+5.8
Indianapolis – Eagle Creek	35.1	30.6	+4.5

(*) – Bloomington temperature data missing for February 14.

(**) – Shelbyville temperature data missing for January 6-8 and February 17.

Winter Extremes Across Central Indiana

Site	Warmest Temperature	Coldest Temperature
Indianapolis Int'l Airport	72 on 2/20	1 on 1/13 and 1/18
Lafayette	68 on 2/20	-3 on 1/13
Muncie	71 on 12/12 and 2/20	1 on 1/18
Terre Haute	71 on 2/20	2 on 1/18
Bloomington	71 on 2/20	-1 on 1/13
Shelbyville	72 on 2/20	0 on 1/13
Indianapolis-Eagle Creek	71 on 2/20	1 on 1/18

Precipitation

DECEMBER

December 2015 was one of the wettest Decembers of record for Indiana. December monthly rainfall and melted precipitation measured from slightly over 3 inches in northeast Indiana to more than 8 inches in west central Indiana. Rainfall ranged from near normal in portions of southern Indiana to record amounts for December in west central Indiana. Rainfall during the last 11 days of the month ended the dry period that persisted in much of the state since August.

Most of the rainfall for December fell in the 8-day period from the 21st-the 28th. Rains of 2 to more than 8 inches fell during this time compared to only a quarter to slightly over an inch for the remainder of the month. For the Indianapolis area, this was the wettest December since the record wet December of 1990. The Indianapolis monthly total of 5.59 inches was a few hundredths of an inch greater than the Decembers of 2006, 2007 and 2008.

Significant flooding quickly returned to central and southern Indiana, for the first time since July, immediately following Christmas. Rains of 1 to 3 inches on the 21st and 23rd saturated the soil and caused elevated stream levels. Much of the heavy rains of 3 to more than 8 inches from the 26th-28th ran into the streams and rivers and caused extensive flooding.

River flooding along the Wabash River in eastern Illinois and western Indiana was the highest since April 2013. Flooding along the White, East Fork White Rivers and many other streams in central and southern Indiana were the highest since June or July. Significant river flooding in western and southern Indiana continued into the New Year.

With such a warm month across the Hoosier state, little snowfall occurred during December. Snowfall was once again confined to northern and central portions of Indiana. Monthly snowfall totals ranged from less than an inch in central Indiana to 2 inches in northern Indiana. With only 0.6 inches of snow in the Indianapolis area, December 2015 tied for the 30th least snowiest December on record.

JANUARY

After one for the wettest Decembers of record, January's liquid precipitation was below normal for nearly the entire state. Melted precipitation totals ranged from less than an inch in portions of west-central and northwest Indiana to nearly 3 inches in southwest Indiana. Much of the state received between 1 and 2 inches for the month.

There were two main rain events during January. The first was on the 9th and early on the 10th when one-half to over an inch and half of rain fell in the state. Temperatures dropping well below freezing early on the 10th caused roadway icing problems. The other rain event was on the 15th when much of the area received from one quarter to over one-half inch of rain.

Rainfall on the 9th and 15th prolonged high water conditions along the Wabash River in western Indiana. With little precipitation after the 15th, stream levels returned to normal at the end of the month.

After a nearly snowless December, snowfall for January was near normal for northern and central Indiana to above normal in southern Indiana. Much of the snow in central and southern Indiana fell from the 10th to the 24th. At Indianapolis, the snowiest day was January 20th when 1.9 inches of snow fell.

FEBRUARY

Monthly liquid precipitation returned to normal in many areas of the state during February. Melted precipitation totals ranged from over an inch in west central Indiana to more than 6 inches in Bartholomew County in south-central Indiana. Much of the state received between 1.5 and 5 inches for the month.

There were three main precipitation events during February. The first was on the late on the 2nd when one-half to more than 2 inches of rain fell in much of central and southern Indiana. The second was early on the 21st when one-half to nearly 3 inches of rain fell south of the I-70 corridor in central and southern Indiana. The most widespread precipitation event occurred on the 24th when one-half to nearly 2.5 inches of liquid precipitation fell state-wide, falling as heavy snow over northwest Indiana.

Lowland flooding followed the rain events of the 2nd, 21st, and 24th. The most widespread flooding occurred after the rains of the 24th. Lowland flooding continued into March in southern Indiana. Warm conditions at the end of the month melted all of the snow cover in the state.

Snowfall for February was near to slightly below normal for much of the state to above normal for northwest and northern portions of north central Indiana. Snowfall during the month ranged from around 2 inches in portions of central Indiana to near 30 inches in northwest Indiana. The biggest snow storm of the month for central and southern

Indiana was the 14th when the area received 2 to 4 inches. Indianapolis officially recorded 4.4 inches of snow for the month.

A potent storm system brought blizzard conditions and more than a foot of snow to northwest Indiana while 1.5 to 2.5 inches of rain fell in the warm sector along and east of the I-69 corridor.

Winter Precipitation Data for Sites in Central Indiana

Site	Winter 2015-16 Precipitation	Normal Precipitation	Diff. From Normal
Indianapolis Int'l Airport	9.30	8.15	+1.15
Lafayette	9.49	6.13	+3.36
Muncie	8.19	7.42	+0.77
Terre Haute (*)	8.94	7.34	+1.60
Bloomington	10.47	9.61	+0.86
Shelbyville	10.80	8.02	+2.78
Indianapolis – Eagle Creek***	7.19	7.42	-0.23

(*) – Terre Haute precipitation data missing on 2/28

Severe Weather

Strong low pressure moving into the upper Midwest produced a rare winter severe weather event across the Mississippi, Ohio and Tennessee valleys on the afternoon of December 23. Multiple lines of thunderstorms producing wind damage moved across central Indiana. Three small tornadoes occurred as well, all producing EF1 damage. The first occurred near Greenwood, the second was just to the southwest of Noblesville, and the third tornado occurred along the Decatur-Rush County line near Williamstown. For more information on the severe weather from the 23rd, go to <http://www.weather.gov/ind/dec232015severe>.

Indianapolis Data

INDIANAPOLIS DECEMBER 2015 SUMMARY

	Average	Total	Total Snowfall	Highs below
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	Temperature	Precipitation		freezing
December 2015	42.6	5.59	0.6	1
Normal December	31.6	3.17	6.9	8
Difference from Normal	+11.0	+2.42	-6.3	-7

December 2015 All-Time Ranks:
Temperature: 3rd Warmest
Precipitation: 9th Wettest
Snowfall: Tied for 30th Least Snowiest

INDIANAPOLIS JANUARY 2016 SUMMARY

	Average Temperature	Total Precipitation	Total Snowfall	Highs below freezing
January 2016	28.9	1.46	5.8	13
Normal January	28.1	2.66	8.6	12
Difference from Normal	+0.8	-1.20	-2.8	+1

January 2016 All-time Ranks
Temperature: Tied for 63rd Warmest
Precipitation: 35th Driest
Snowfall: Tied for 72nd Least Snowiest

INDIANAPOLIS FEBRUARY 2016 SUMMARY

	Average Temperature	Total Precipitation	Total Snowfall	Highs below freezing
February 2016	34.8	2.25	4.4	7
Normal February	32.1	2.32	6.5	7
Difference from Normal	+2.7	-0.07	-2.1	+0

February 2016 All-Time Ranks:
Temperature: 40th Warmest
Precipitation: 72nd Driest
Snowfall: Tied for 72nd Least Snowiest

INDIANAPOLIS 2015-2016 WINTER SEASON SUMMARY

	Average Temperature	Total Precipitation	Total Snowfall	Highs Below Freezing	Lows Below Zero
Winter 2014-2015	34.4	9.30	10.8	21	0
Normal Winter	30.5	8.15	22.0	27	6
Difference from Normal	+4.9	+1.15	-11.2	-6	-6

Winter 2015-2016 All-Time Ranks
Temperature: Tied for 12th Warmest
Precipitation: 50th Wettest
Snowfall: 50th Least Snowiest

Temperature and precipitation records at Indianapolis go back to 1871. Snowfall records go back to 1884.

Spring 2016 Outlook

The official outlook for meteorological spring (March-May 2016) from the Climate Prediction Center indicates a slightly greater chance of above normal temperatures. At Indianapolis, the average temperature for the spring season is 52.6 degrees. The outlook also calls for a greater chance of below normal precipitation. The average spring season precipitation is 12.42 inches along with 2.8 inches of snowfall, most of which typically falls during the month of March.

Data prepared by the NWS Indianapolis Forecast Office.